

Effect of different degree of deacetylation, molecular weight of chitosan and palm stearin and palm kernel olein concentration on chitosan as edible packaging for cherry tomato

Abstract

The palm stearin and palm kernel olein (PSPKOo) blend (at 31%) was incorporated into chitosan of different degree of deacetylation (DD) (85 and 95%) and molecular weight (MW) (100,000 and 300,000 Da) to form films, and the films were evaluated in terms of particle size, diameter and stability of emulsion, as well as thickness and tensile strength. The chitosan with 85% DD (MW 300,000 Da) and 31% PSPKOo blend resulted in the strongest film, while this chitosan varied with 15.5 and 31% of PSPKOo blends compared to physical properties of film. Emulsion blend containing 85% DD (MW 300,000 Da) and 31% PSPKOo blend of chitosan gave the biggest particle size, highest viscosity and the most stable emulsion, resulting in the thickest film with the highest tensile strength (TS) and elastic modulus (EM). The film was applied on cherry tomato and stored at 20C for 9 days. The chitosan film with 85% DD (MW 300,000 Da) and 31% PSPKOo blend was the most effective in reducing weight loss and maintaining firmness and redness of cherry tomato compared to the other two films. Hence, palm stearin (PS) showed potential to be used as a moisture barrier in fruit coating.